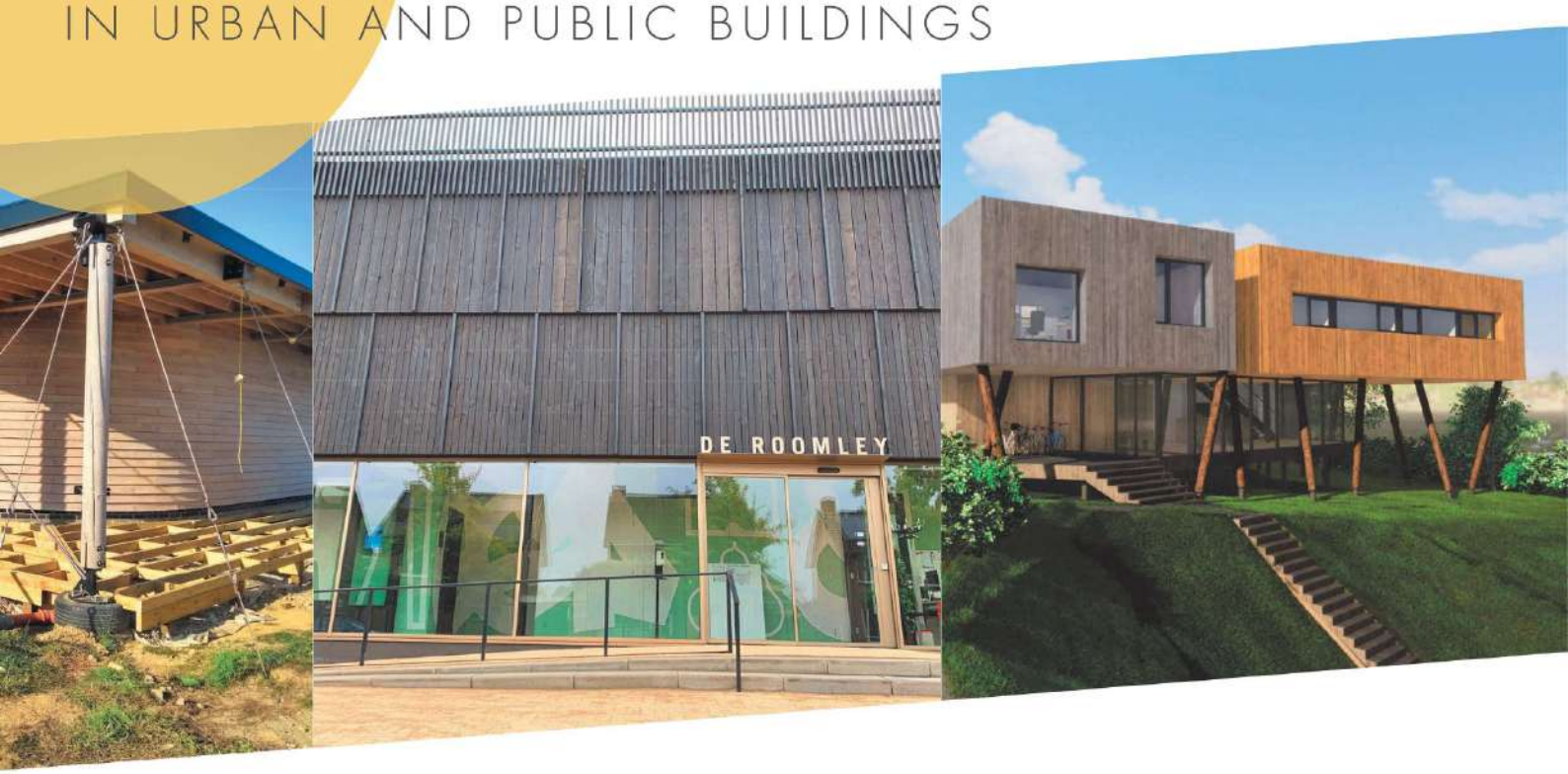
Interreg North-West Europe
UP STRAW
European Regional Development Fund
EUROPEAN UNION
2017-2023

Significant results

July 2023

SUPPORTING THE USE OF STRAW IN URBAN AND PUBLIC BUILDINGS



Our society is facing many economic, social and environmental challenges.
Eco-construction and, specifically, straw building provide solutions that offer high-quality economic development, social well-being and respect for the environment.
When public authorities are aware that profound reforms are needed they can provide the impetus for tangible, long-term action that then becomes mainstream. That's why this project addresses public market.
Much progress is, however, still possible and desirable within the field of construction - a sector that directly influences our quality of life and that of future generations.
Our regions have the resources, companies and know-how needed to meet the demand for innovative buildings that are beneficial for sustainable development of the economic fabric.

Public procurement is a true driver for change in the construction sector and can play an essential role in raising the status of local companies and resources.
In this document, which closes the UP STRAW Interreg North West Europe project, we wanted to present some significant actions and results achieved thanks to the collaboration of 5 North West European countries, 7 partners and 7 sub-partners.
These results show that cooperation allows us to enrich ourselves individually while working together on the main axis of this project: to participate in the reduction of greenhouse gases by proposing the straw material as a premium solution to be integrated into our public buildings.
All the results of the project are available on: https://vb.nweurope.eu/projects/project-search/up-straw-urban-and-public-buildings-in-straw/

Total Budget: 7.03 M€
ERDF funds: 4.38 M€

Database ZOTERO

The working group Long-term effect has created a database listing more than 500 publications dedicated to straw construction.
It is intended for all audiences: building professionals, developers, scientists, the curious, etc.

The publications cover all subjects related to construction: regulatory aspects, construction techniques, technical and environmental performances, fire safety, acoustic data, scientific publications...

The publications are classified by subject:

- Building codes - Technical assessment
- Mechanical Resistance - Stability
- Safety in case of fire
- Hygiene Health Environment
- Safety in case of fire
- Protection against noise
- Energy economy - Heat retention
- Sustainable use of renewable resources
- Hygrothermal properties
- Life Cycle Assessment
- Acoustics
- Renovation with straw
- Durability
- Loadbearing - Strength of materials
- Technical books and guides
- Non-technical information
- Feedback and Straw Model Buildings
- Fire reaction

online bookshop
scalable
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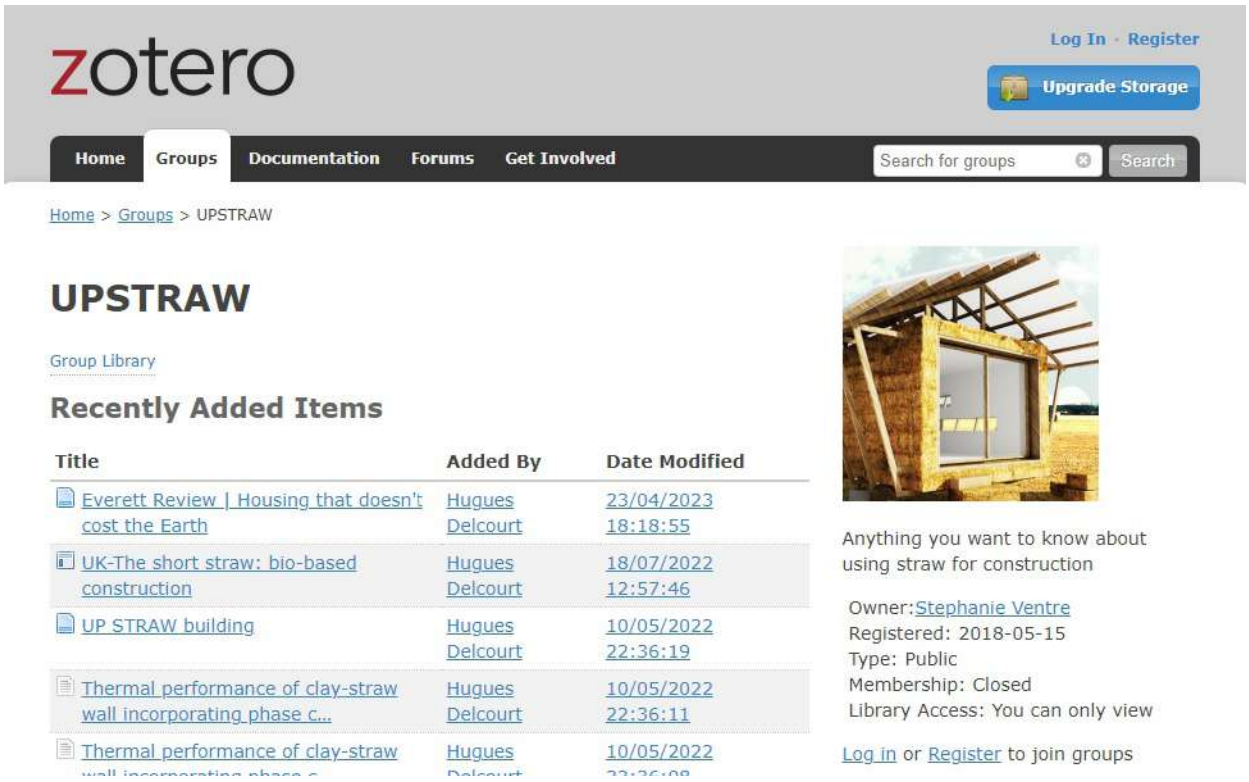
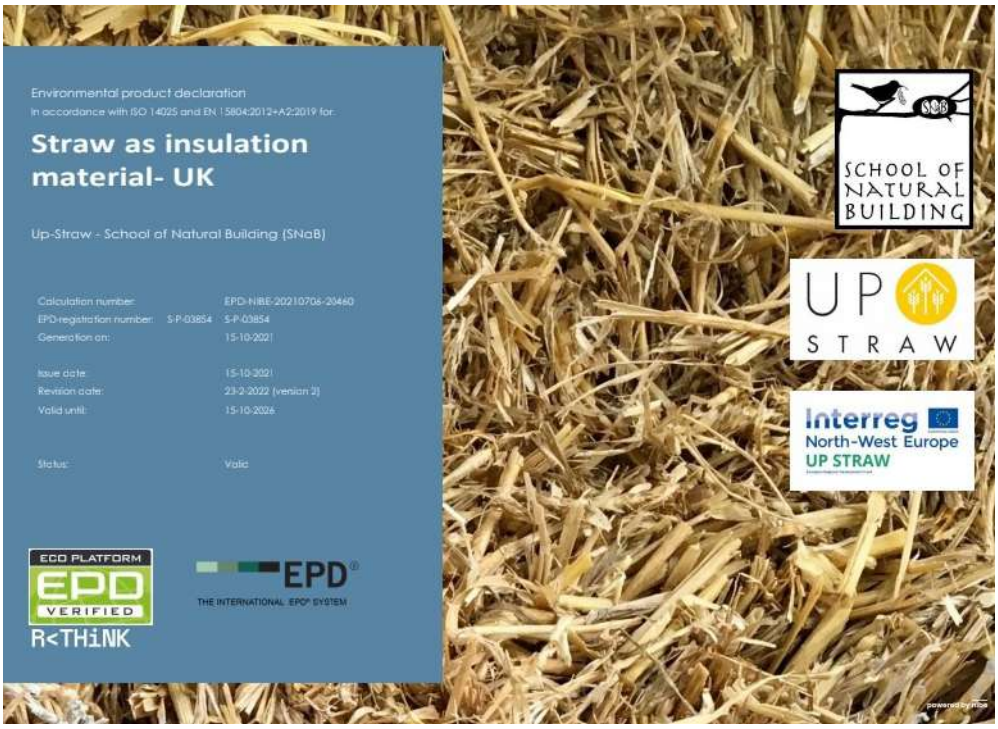
HERE



First Environnemental product declaration (EPD) for straw as insulation material in UK



The objective of this LCA is to compile quantified information on the environmental characteristics of straw as an insulation material in construction in the UK.

These data are established from all the stages of the product's life cycle: extraction of raw materials and supply, transport to the building site, implementation, life in use and end of life ("recycling", "disposal").

The environmental data can then be used in the calculations of buildings and/or civil engineering works or in an LCA of the final product.

This standardised declaration also allows the straw material to be compared with other insulating materials fulfilling the same function.

Thanks to the UP STRAW project and ERDF fundings the market of straw as a building material in the UK is promised to a great development.

Consult the document: HERE

When the UP STRAW project inspires the creation of an innovative structure

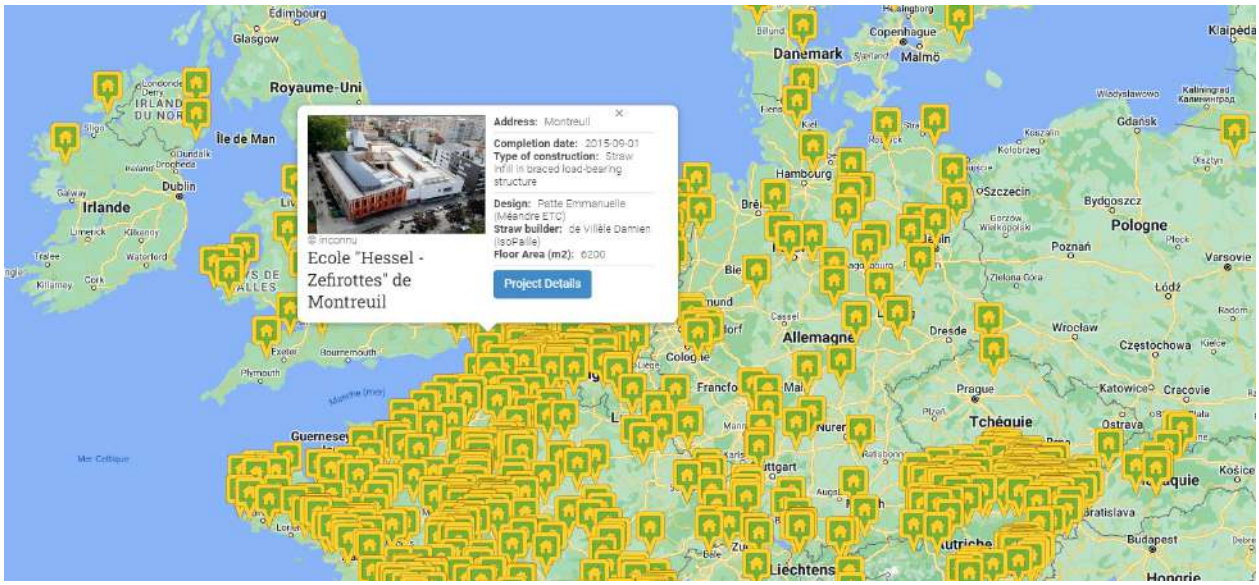
De Roomley Sports-hall (Udenhout - NETHERLANDS)
The largest renovation with Dutch straw

By becoming a partner in the UP STRAW project and supported by Strobouw Nederland, the municipality of Tilburg wanted to renovate one of its public buildings dating from the 1970s by using blown in straw.
The sports centre "De Roomley" was identified as the pilot building for this renovation.

ielo SCIC website: HERE

The "Tilburg experiment", aided by the collaboration of various partners (feedback, experiments, etc.), led to the creation of a new structure: an innovative cooperative, ielo SCIC, which is now developing and marketing blown straw in France for the construction or renovation of buildings.

Register of buildings constructed and: or insulated with straw in North West Europe



The project partners have collected in their respective countries the available data on all buildings built or renovated with straw.
This register lists more than 1,400 projects built or renovated using straw in the project's partner countries.

This register is available online and accessible free of charge.

Consult the Buildings Register: HERE

Building Information Modeling

UP STRAW - Interreg NWE

Mur à remplissage en bottes de paille avec...

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UP STRAW - Interreg NWE

Mur porteur en grosses bottes de paille.

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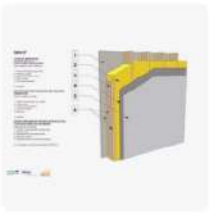

UP STRAW - Interreg NWE

Caisson à remplissage en bottes de paille ave...

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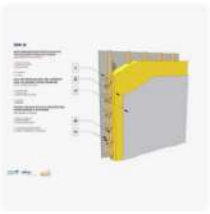

UP STRAW - Interreg NWE

Mur à remplissage en bottes de paille avec...

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SBW_01 - Remplissage en paille d'une ossatur...

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UP STRAW - Interreg NWE

Mur porteur en petites bottes de paille.

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UP STRAW - Interreg NWE

Toiture terrasse avec remplissage en bottes...

Télécharger

UP STRAW - Interreg NWE

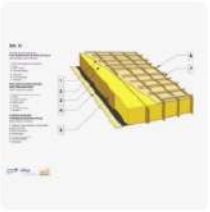
Mur à remplissage en bottes de paille avec...

Télécharger

UP STRAW - Interreg NWE

Caisson à remplissage en bottes de paille ave...

Télécharger



UP STRAW - Interreg NWE

Toiture à structure bois avec remplissage en...

Télécharger

12 walls representative of the main current practices in straw construction were modelled in BIM by the UP STRAW partners!

The walls were described in 3D and commented on in French, English and Spanish, with a list of materials used and environmental and thermal performance levels estimated with the coconbim software.

This information was described by documents in pdf and docx format and available as «BIM files» (skp, rvt, pln format) which can be imported into software such as Archicad, ArchLine, Sketchup, Revit, etc.
All these documents can be downloaded for free on the BimObject website.

See the documents: HERE

Education and Training working group - Results

The task of the Education and Training working group is to set up training courses, both initial and professional, for architects, engineers, economists, traders, financing bodies, insurance companies, universities and students.

Main results:

- Partnership with 13 universities
- Training of 2050 professionals and students
- Creation of a short introductory course on straw construction
- Creation of a MOOC, Building for Change - Naturally!
- Accreditation
- Identification of new markets and implementation of a strategy
- Identification of obstacles and incorporation into training programmes
- Creation of a technical guide for professionals in the building sector

Massive Open Online Course - MOOC “Building for Change - Naturally”

UP STRAW partners have written a brand new MOOC to enable everyone to learn more about straw and natural building: “Building for Change - Naturally”.

The first session of this bilingual French/English MOOC held in October 2020 registered almost 4000 registrations, with an overall satisfaction rate of 89%.

A second session was organised in January 2021, enriched by users’ remarks and suggestions.

In total, 6,643 people registered for this free 6-week training course to discover and deepen their knowledge of straw construction techniques.

Presentation of the course: HERE

Research report on thermal conductivity and water migration

This report is based on a 2017 European Technical Assessment (ETA 17/047), in order to have an approved building material for straw bales throughout Europe.

See the report:
HERE

Inventory of available straw processing / straw building equipment

This report presents an inventory of the systems, equipment and tools available for using straw in construction.

See the report: HERE

Demonstration buildings

Each partner country in the UP STRAW project has built a demonstration building using straw for new-build and renovation projects under public procurement contracts.

Watch the video presentation of the 5 demonstration buildings: HERE

Cluster Eco-Construction Office - Namur (BE)
Innovative building using half-log walls

Identity card

PROJECT TYPE: Construction
BUILDING TYPE: Office
CONTRACTING AUTHORITY: Cluster Eco-construction
BUILDING MANAGEMENT CONSULTANT: BEP
STAKEHOLDERS:
- General contractor : Mobic
- Architect : Helium 3 + Havresac
- Consulting engineers company: Homeco
- Health & security: Genie Tec Belgium

DELIVERY YEAR: 2021
NET USABLE AREA: 400 m2
COST (total & €/m2): 840.000 € - 2.100 €/m2
STRAW CONSTRUCTION TECHNIQUE:
Half-logs formwork compressing straw insulation
VOLUME OF STRAW USED IN THE PROJECT (m3): 121 m3
DISTANCE BETWEEN STRAW SUPPLY AND THE PROJECT: 150 km

The Cluster Eco-Construction wanted to highlight all aspects of bio- and geo-sourced materials and eco-construction techniques.
Right from the design stage, the design & build method was chosen, bringing together the design team and the works team in a single entity.
The offices were delivered in 3D modules. The structure is laid on screw piles. The posts are made from machined logs.
The small footprint and the choice of innovative materials (in addition to straw - grass insulation) in short circuits and circular economy, make this a building that can be easily deconstructed.

GREEN SOLUTIONS AWARDS
POWERED BY Construction21.org

See the video:
HERE

Accommodation building at the Benedictine Abbey of Plankstetten - Berching (DE)
The largest straw bale building in southern Germany

Identity card

BUILDING TYPE: Multi-purpose building
CONTRACTING AUTHORITY: Benedictine Abbey Plankstetten
STAKEHOLDERS:
- Architect: Hirner + Riehl Architekten BDA
- Structural design: LERZER ING + Plan GmbH
- Construction management: Engineering office Seibold + Seibold
- Timber & straw construction: Holzbau Bogner GmbH

DELIVERY YEAR: 2021
NET USABLE AREA: 1.555 m2
TOTAL COST: 6.000.000 € - 3.858€/m2*
STRAW CONSTRUCTION TECHNIQUE:
Wooden stand construction with straw bale infill made of prefabricated elements
VOLUME OF STRAW USED IN THE PROJECT (m3): 300m3
DISTANCE BETWEEN STRAW SUPPLY AND THE PROJECT: 5 km
*The costs include expenses related to special requirements for fire protection, cultural heritage protection and the geological hazard of a landslide.

The construction of a new reception building at Plankstetten Abbey is part of a programme to renovate the site, whose historic buildings are protected. This multi-purpose building houses bedrooms, the parish administration and a kindergarten. Ecological and sustainable construction was at the heart of the Abbey's concerns. The 300 m3 of straw and 400 m3 of wood come from the monastery's fields and forests. Straw was used in many parts of the building: 50 walls prefabricated in the workshop, 25 ceilings and roofing elements.
Most of the companies involved were regional, operating within a 30km radius. Plankstetten Abbey is continuing its commitment to sobriety and the conservation of resources.

See the video:
HERE

CNCP training centre - Montargis (FR)

An eco-construction training centre on the cultural heritage site of the Maison Feuillette

Identity card

PROJECT TYPE: Construction and renovation
BUILDING TYPE: Training centre
CONTRACTING AUTHORITY: Centre National de la Construction Paille
STAKEHOLDERS:
- Architect: Vivarchi
- Thermal and fluids design office: Treenergy
- Control office: APAVE
- Project management assistance: ITG Construction - Entrevue - Acecotech

DELIVERY YEAR: 2023
NET USABLE AREA:
New build: 132 m2
Renovation: 164 m2
COST (total & €/m2): 920 € / m2
STRAW CONSTRUCTION TECHNIQUE:
prefabrication and external thermal insulation
VOLUME OF STRAW USED IN THE PROJECT (m3): 80 m3

The Centre National de la Construction Paille is based on the classified site of the Maison Feuillette, which is the oldest building constructed using wood frame and straw insulation (1920).
The project involves the construction of a new building and the renovation of old industrial buildings, together forming the eco-construction training centre.
The new building includes two rooms for theoretical training and a refectory. It is built of wood and straw frames, with clay rendering on the inside and lime on the outside.
The two refurbished buildings house the changing rooms and a technical centre. The cloakroom building has been refurbished with ETI (wood wool).
This project provides environmental solutions: choice of techniques, rehabilitation, eco-construction, double-flow ventilation. Social: it is a demonstration building, designed to accommodate a range of training needs.
Economic: most of the participants are local, and the building's thermal choices will reduce operating energy.
In a way, it reflects Emile Feuillette's objectives when he built the house that bears his name: local resources, simple skills and local craftsmen.

See the video:
HERE

De Roomley Sports-hall - Udenhout (NL)
The largest renovation with Dutch straw

Identity card

PROJECT TYPE: Renovation & extension
BUILDING TYPE: Sports facility
CONTRACTING AUTHORITY: The Municipality of Tilburg
BUILDING MANAGEMENT:
Real estate department Tilburg
STAKEHOLDERS:
- Design : Spacetranslators
- Installation advice : W-inst
- Main contractor : Van Der Weegen
- Prefab wood constructions : Barli

DELIVERY YEAR: 2020
NET USABLE AREA: 2.568 m2
COST (total & €/m2) :
2.850.000 € - 1.100 €/m2
STRAW CONSTRUCTION TECHNIQUE: Prefab sections with 32cm blown in straw
VOLUME OF STRAW USED IN THE PROJECT (m3): 260 m3
DISTANCE BETWEEN STRAW SUPPLY AND THE PROJECT: 250 km

As part of a programme to renovate public buildings, the municipality of Tilburg listed 150 buildings dating from the 1970s.
The De Roomley sports hall was identified as a pilot building that could benefit from renovation using straw as insulation.
During the design phase, different options were examined by all the partners and with various designers of exemplary buildings.
The structural constraints of the building meant that straw bales could not be used; the choice of prefabricated elements and blown straw was the obvious one, allowing rapid implementation for this building, which has remained open to the public.
Straw blowing is an easy process that can be adapted both in the workshop and on site.
This renovation will reduce energy consumption to heat the building and keep it cool in summer, resulting in a zero-energy building with a view to sustainable operation of the building.

Innovation award winner 2021

See the video:
HERE

"The Bale House", a brand-new visitor centre at Hastings Country Park Nature Reserve (UK)
First public building insulated with straw in UK

Identity card

PPROJECT TYPE: Construction
BUILDING TYPE: Country Park Visitor Centre
CONTRACTING AUTHORITY: Hastings Borough Council
BUILDING MANAGEMENT: The Cave Cooperative
STAKEHOLDERS :
- Architect: The Cave Cooperative
- Contractor: Huff and Puff Construction
- Sustainable management: Green & Castle
- Centre managers: Groundwork South
- Design & build consultancy: Red Kite

DELIVERY YEAR: 2020
NET USABLE AREA: 225 m2
COST (total & €/m2) :
900.000 € - 4.000 €/m2
STRAW CONSTRUCTION TECHNIQUE: Hybrid Load Bearing
VOLUME OF STRAW USED IN THE PROJECT (m3): 80 m3
DISTANCE BETWEEN STRAW SUPPLY AND THE PROJECT: 100 km

The visitor centre is a new building for the public of the Hastings nature reserve and the residents of Hastings.
The entire building is made from natural materials such as wood, straw and recycled materials. Such a place could only be in harmony with the flora and fauna, and allows the town to confirm its commitment to both social and ecological issues.
The construction technique used is hybrid load-bearing straw.

Award-winning building International Green Solutions Award 2021
Civic trust regional Finalist Award 2022

See the video: HERE

Communication working group

The role of the Communication working group was to:

- promote the project's activities and the demonstration buildings to public authorities and the general public
- publish a range of specialist information materials for professionals and contractors
- support the development of the straw-bale construction market and raise awareness of the qualities of the material.

26,000 followers on social networks

310,000 visitors to the websites

120 articles on the Interreg NWE UP STRAW website

46 trade fairs and events

55 press and TV articles

7 UP STRAW conferences

21 sectoral agencies

400 representatives of local, regional and national authorities

40 higher education and research institutions

26 business support organisations

50 associations

86 SMES

Over 1 million members of the general public

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We would like to thanks our partners and the team of the project for their involvement in achieving the project results during 7 years.